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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/060,058	01/31/2002	Masaki Ueno	107355-00052	6576

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EXAMINER

NGUYEN, TU MINH

ART UNIT	PAPER NUMBER
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3748

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DATE MAILED: 11/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action SummaryApplication No.
10/060,058Applicant(s)
Ueno et al.Examiner
Tu M. NguyenArt Unit
3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Jan 31, 2002 is/are a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 1 6) ☐ Other:

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DETAILED ACTION

Specification

1. The disclosure is objected to because on page 2, line 3, "switcable" should read --switchable--. Appropriate correction is required.

Claim Objections

2. Claim 1 is objected to because on line 5, "a exhaust" should read --an exhaust--; and on line 22, "absorbent" should read --adsorbent--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4, 6, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka et al. (U.S. Patent 5,956,947).

Re claim 1, as shown in Figures 1-7, Tanaka et al. disclose an exhaust emission control system of an internal combustion engine for cleaning exhaust gases discharged from the internal combustion engine, comprising:

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- an exhaust system defining a main exhaust passage (path A in Figure 2) connected to an internal combustion engine (1), and a bypass exhaust passage (path B) which branches off and joins back to the main exhaust passage;

- a switching device (40, 41, 43, 44) switching an exhaust gas flow path to either of the main exhaust passage and the bypass exhaust passage;

- an adsorbent material (42) disposed within the main exhaust passage for adsorbing unburned constituents (hydrocarbon) of exhaust gases introduced into the main exhaust passage and releasing the unburned constituents as temperature increases; and

- a control device (100) operable to control the switching device,

wherein the control device switches the exhaust gas flow path to the main exhaust passage when the adsorbent material absorbs the unburned constituents (see steps 402-406 in Figure 4; lines 28-37 of column 8; and Figure 5), the control device switches the exhaust gas flow path to the bypass exhaust passage when the absorbed unburned constituents is released from the adsorbent material (see steps 404 with NO answer, 410, 411, 412 with NO answer, and 409; line 38 of column 8 to line 16 of column 9; and Figure 6), and the control device switches the exhaust gas flow path to the main exhaust passage when a release of the absorbed unburned constituents is completed (see steps 412 with YES answer, 413, 414 with YES answer, and 406; lines 17-52 of column 9).

Re claim 4, in the control system of Tanaka et al., the switching device has a switching valve element (40) adapted to freely move between an open position where the main exhaust

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passage is opened whereas the bypass exhaust passage is closed, and a closed position where said main exhaust passage is closed whereas the bypass exhaust passage is opened,

- a biasing device (43, 44) for biasing the switching valve element to the open position,
and

- an actuator (41) for driving the switching valve element from the open position to the closed position against the biasing device.

Re claim 6, in the control system of Tanaka et al., the switching device further comprises:

- a rotational shaft (44) adapted to be driven to rotate by the actuator; and
- an arm (43) connected between the switching valve element and the rotational shaft for driving the switching valve element in conjunction with a rotation of the rotational shaft,
wherein the rotational shaft and the arm are disposed in the bypass exhaust passage.

Re claim 7, in the control system of Tanaka et al., the absorbent material includes a zeolite (line 44 of column 5).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rao et al. (U.S. Patent 5,396,764) in view of Tanaka et al.

Re claim 1, as shown in Figures 1A, 3, and 6-8, Rao et al. disclose an exhaust emission control system of an internal combustion engine for cleaning exhaust gases discharged from the internal combustion engine, comprising:

- an exhaust system defining a main exhaust passage (where filter (30) is located) connected to an internal combustion engine (12), and a bypass exhaust passage (annular passage surrounding filter (30)) which branches off and joins back to the main exhaust passage;
- a switching device (156, 172, 174, 176) switching an exhaust gas flow path to either of the main exhaust passage and the bypass exhaust passage;
- an adsorbent material (30) disposed within the main exhaust passage for adsorbing unburned constituents (hydrocarbon) of exhaust gases introduced into the main exhaust passage and releasing the unburned constituents as temperature increases; and
- a control device (not shown but obviously must have) operable to control the switching device,

wherein the control device switches the exhaust gas flow path to the main exhaust passage when the adsorbent material absorbs the unburned constituents (see lines 10-24 of column 5; and Figure 7), and the control device switches the exhaust gas flow path to the bypass exhaust passage when the absorbed unburned constituents is released from the adsorbent material (see lines 31-62 of column 5; and Figure 8).

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Rao et al., however, fail to disclose that the control device further switches the exhaust gas flow path to the main exhaust passage when a release of the absorbed unburned constituents is completed.

As depicted in Figures 1-7, Tanaka et al. teach a similar system to remove hydrocarbon (HC) from the exhaust gas. Initially, they open the flow path A when the engine is still cold so that HC in the exhaust gas can be adsorbed by the adsorbent (42). When the engine is hot, the flow path A is closed and the exhaust gas is allowed to mostly flow through the flow path B to heat up and desorb the HC from the adsorbent. When HC is fully desorbed from the adsorbent, a fuel cut operation is performed (step 414 with YES answer), and the oxygen rich exhaust gas is allowed to flow through the flow path A (step 406) so that soot trapped in the adsorbent can be burned off effectively (see lines 32-52 of column 9). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Tanaka et al. in the system of Rao et al., since the use thereof would have provided an effective means to remove soot which can clog up the adsorbent material.

Re claim 2, as clearly shown in Figure 6, the exhaust system in the modified control system of Rao et al. has the bypass exhaust passage including an annular passage portion surrounding in an annular fashion a portion of the main exhaust passage, on which the adsorbent material (30) is disposed.

Re claims 3 and 4, as shown in Figure 2 of Tanaka et al., the switching device in the modified control system of Rao et al. has a switching valve element (40) adapted to freely move

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between an open position where the main exhaust passage is opened whereas the bypass exhaust passage is closed, and a closed position where said main exhaust passage is closed whereas the bypass exhaust passage is opened,

- a biasing device (43, 44) for biasing the switching valve element to the open position,

and

- an actuator (41) for driving the switching valve element from the open position to the closed position against the biasing device.

Re claims 5 and 6, as shown in Figure 2 of Tanaka et al., the switching device in the modified control system of Rao et al. further comprises:

- a rotational shaft (44) adapted to be driven to rotate by the actuator; and
- an arm (43) connected between the switching valve element and the rotational shaft for driving the switching valve element in conjunction with a rotation of the rotational shaft,

wherein the rotational shaft and the arm are disposed in the bypass exhaust passage.

Re claim 7, in the modified control system of Rao et al., the absorbent material includes a zeolite (line 64 of column 5).

Prior Art

7. The IDS (PTO-1449) filed on January 31, 2002 has been considered. An initialized copy is attached hereto.

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8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of five patents: Kammel (U.S. Patent 5,097,665), Usami et al. (U.S. Patent 5,761,902), Akazaki et al. (U.S. Patent 5,946,906), Tanaka et al. (U.S. Patent 6,012,284), and Takakura et al. (U.S. Patent 6,286,306), each discloses an exhaust gas purification system comprising an adsorbent or a filter located in a bypass passage to remove unburned HC or soot in the exhaust gas when the engine is still cold.

Communication

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (703) 308-2833.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (703) 308-2623. The fax phone number for this group is (703) 308-7763.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1148.

TMN

November 3, 2002

Tu M. Nguyen

Tu M. Nguyen

Patent Examiner

Art Unit 3748

Thomas Denion
THOMAS DENION

SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700